



(19)

Europäisches Patentamt
European Patent Office
Office européen des brevets



(11)

EP 0 791 681 A3

(12)

EUROPEAN PATENT APPLICATION

(88) Date of publication A3:
22.04.1998 Bulletin 1998/17

(51) Int. Cl.⁶: **D06M 11/44**

(43) Date of publication A2:
27.08.1997 Bulletin 1997/35

(21) Application number: **97102295.9**

(22) Date of filing: **13.02.1997**

(84) Designated Contracting States:
DE FR GB IT

(30) Priority: **22.02.1996 JP 35118/96**
09.05.1996 JP 114863/96
09.05.1996 JP 114864/96
09.05.1996 JP 114865/96
01.11.1996 JP 291719/96

(71) Applicant:
mitsui Mining & Smelting Co., Ltd.
Chuo-ku Tokyo-to 103 (JP)

(72) Inventors:
• **Yamaguchi, Yasuhide**
Ageo-shi, Saitama (JP)
• **Nakano, Masahiko**
Ageo-shi, Saitama (JP)
• **Suzuoka, Kenji**
Ageo-shi, Saitama (JP)

(74) Representative:
Casalonga, Axel et al
BUREAU D.A. CASALONGA - JOSSE
Morassistrasse 8
80469 München (DE)

(54) **Composite material carrying zinc oxide fine particles adhered thereto and method for preparing same**

(57) A zinc oxide fine particle-adhered composite material consists essentially of a substrate and zinc oxide fine particles adhered thereto. The composite material is characterized in that the zinc oxide fine particles deposited, from an aqueous medium, on the surface of the substrate are firmly adhered to the surface without using any binder and the zinc oxide fine particles are substantially exposed on the surface. The composite material is prepared by, for instance, a method which comprises the step of coming an aqueous suspension of zinc oxide fine particle in contact with a substrate to thus deposit the zinc oxide fine particles on the surface of the substrate. The composite material allows for the zinc oxide particles to sufficiently show their antibacterial, deodorizing, UV absorbing, photocatalytic, stain-proofing and purifying activities without any delay.

EP 0 791 681 A3



European Patent Office

EUROPEAN SEARCH REPORT

Application Number
EP 97 10 2295

DOCUMENTS CONSIDERED TO BE RELEVANT			
Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (Int.Cl.6)
X A	US 4 199 322 A (DANNA GARY F ET AL) * column 2, line 28 - column 5, line 34 * * examples 2.4.6.8.9 * ---	1.10 15.18	D06M11/44
X	DATABASE WPI Section Ch. Week 9324 Derwent Publications Ltd., London, GB: Class A94, AN 93-19192 XP002056722 -& JP 05 117 910 A (TOYO KOGYO CO) . 14 May 1993	1.10	
A	* abstract * ---	2.15.18	
A	EP 0 379 581 A (KOHJIN CO) * page 5, line 23 - page 9, line 8 * * examples 4-6,10-12 * ---	1-4,10, 15.18	
A	DATABASE WPI Section Ch. Week 9317 Derwent Publications Ltd., London, GB: Class A23, AN 93-141359 XP002056723 -& SU 1 707 113 A (BAST FIBRES IND RES INST) . 23 January 1992 * abstract * ---	1.10, 15, 18	TECHNICAL FIELDS SEARCHED (Int.Cl.6) D06M
A	DE 12 92 309 B (MONSANTO CO) * column 2, line 33 - column 5, line 11 * -----	1.10, 15, 18	
The present search report has been drawn up for all claims			
Place of search		Date of completion of the search	Examiner
THE HAGUE		24 February 1998	Herrmann, J

EP 0 791 681 A3 (1998-02-24)

CATEGORY OF CITED DOCUMENTS		T theory or principle underlying the invention
X particularly relevant if taken alone	Y particularly relevant if combined with another document of the same category	E earlier patent document, but published on or after the filing date
A technological background	D non-written disclosure	D document cited in the application
P intermediate document		L document cited for other reasons
		S member of the same patent family, corresponding document